REMARKS

Claims 2-6, 8-12, 14-18, and 20-24 are now pending in the above-captioned application. Claims 25-35 have been withdrawn from consideration in response to a Restriction Requirement. Claims 25-35 are being prosecuted in a Divisional Application Ser. No. 09/953,560 filed September 17, 2001. The Examiner may wish to review both cases at the same time in order to improve quality and efficiency of Examination.

EXPLANATION OF VOLUNTARY AMENDMENTS IN VIEW OF FESTO DECISION:

The Federal Circuit recently ruled that:

"In response to En Banc Question 2, **we hold that "voluntary" claim amendments are treated the same as other claim amendments; therefore, any voluntary amendment that narrows the scope of a claim for a reason related to the statutory requirements for a patent will give rise to prosecution history estoppel with respect to the amended claim element.** In response to En Banc Question 3, we hold that **when a claim amendment creates prosecution history estoppel, no range of equivalents is available for the amended claim element.** In response to En Banc Question 4, we hold that **"unexplained" amendments are not entitled to any range of equivalents.** We do not reach En Banc Question 5, for reasons which will become clear in our discussion of the specific case before us." *FESTO CORPORATION, v. SHOKETSU KINZOKU KOGYO KABUSHIKI CO., LTD., a/k/a SMC CORPORATION, and SMC PNEUMATICS, INC. Fed. Cir. decision 95-1066, November 29, 2000,* (emphasis added).

In view of this decision, it behooves applicant to insure that all amendments are explained, even those that are made for reasons that should be readily apparent to a practitioner or Examiner of ordinary skill in the art.

While reviewing the claims pending in the application, the undersigned may have noted a number of minor idiomatic English errors, as well as some §112 errors not cited by the Examiner. Any such

amendments made to correct such errors were not made to overcome or distinguish from Prior Art, unless explicitly stated otherwise below.

The claims may have been amended to improve clarity by deleting reference to step numbers, make the claim language consistent from claim to claim, correct antecedent basis errors, and correct blatant errors in idiomatic English.

For example, in Claim 11, a dependency error noted by the Examiner has been corrected. In claim 19, line 3, "receivers" has been changed to --receiver-- as inserted into Claims 20 and 21 to correct an idiomatic English error. In addition, in claim 21, the word --and-- has been inserted to the claim 19 language to correct an idiomatic English error..

Applicant submits that these changes are intended only to improve the readability of the claims for examination purposes and to make more definite what applicant is claiming and do not limit the claims in any way. In cannot be the intention of *Festo* to encourage poorly drafted claim language remain in the application.

CLAIM OBJECTION

Claim 11 was objected to by the Examiner due to a minor typographical error. The above Amendment corrects this error.

OBJECTION TO THE SPECIFICATION

The Examiner objected to some minor typographical errors which have been corrected by the above amendment. Applicant has carefully reviewed

the Specification for any additional errors and has taken this opportunity to correct them.

REJECTION UNDER 35 U.S.C. §102

Claims 1-24 were rejected under 35 U.S.C. §102(e) as being anticipated by Evers '811.

Claims 1-24 were rejected under 35 U.S.C. §102(b) as being anticipated by Drobnicki et al. '784.

Claims 13-24 were rejected under 35 U.S.C. §102(b) as being anticipated by either Farmakis et al. '948, Schwab et al. '315, or Atul (JP 9119983A).

Applicant respectfully traverses these rejections.

In order to be complete, an anticipation-type rejection must contain two elements:

1. The reference must qualify as "Prior Art" under one of the sections of 35 U.S.C. §102; and

2. The reference must explicitly teach *ALL* of the features of the claimed invention.

Evers '811 is assigned to the same assignee as the present application[1]. This application is a Divisional of U.S. Patent No. 5,999,116, filed July 14, 1998 and issued December 7, 1999. It is not clear to applicant why the earlier Evers patent was not applied as opposed to the later Divisional application. Both have the same effective filing date of July 14, 1998.

[1] Note that the references applied by the Examiner were all cited by applicant in an IDS. Applicant has made a good faith effort to cross-index all of the patent applications filed by the assignee and cross-cite all cited references in these applications.

35 U.S.C. §102(e) states:

> 35 U.S.C. 102 Conditions for patentability; novelty and loss of right to patent.
>
> A person shall be entitled to a patent unless -
>
> (e) **the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant** for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent"

The present application claims Priority from Provisional U.S. Patent Application Ser. No. 60/113,169 filed on December 21, 1998, approximately five months after the Evers Patent was filed. The Examiner is correct in noting that the two applications are directed toward similar subject matter, as both inventions were developed by inventors working together at the same company (Rannoch Corporation).

The Evers Patent, however, is directed more toward the concept of determining aircraft position using TDOA techniques. The present invention focuses more on determining Aircraft identification (e.g., N-number, Serial Number, or the like) by correlating Mode-S or other type of transponder or radio signal information with a database or other signal source or through an algorithm or the like (See, e.g., dependent claims 2-5).

The claims in the present application are directed toward the identification technique of the present invention, by itself or in combination with a technique for determining aircraft position. Evers '811 does not teach or suggest these various identification algorithms or techniques. It is interesting to note in the brief rejection that the Examiner does not address any of the specific limitations of dependent claims 2-6, 8-12, 14-18 or 21-24.

However, in view of the Examiner's rejection, applicant realizes that there may be some subject matter overlap between the present invention and the Evers' Patents. Thus, applicant is submitting herewith a correction of inventorship in the above-captioned application to add Mr. Evers as co-inventor as is permitted under revised 37 CFR §1.48. The error in failing to name Mr. Evers as an inventor occurred without any deceptive intent.

As the present application and the Evers '811 Patent now have an inventor in common, and clearly have subject matter in common as indicated by the Examiner's rejection, the present application has been amended to claim priority from the Evers '811 Patent and '116 Patent as a C-I-P application. Thus, the Evers '811 reference is no longer applicable as "Prior Art" under any section of 35 U.S.C. §102 and the §102 rejection must be withdrawn.

Drobnicki et al., U.S. Patent No. 5,262,784 has been applied under 35 U.S.C. §102(b) to all of claims 1-24. Applicant respectfully traverses this rejection. As noted above, in order to be complete, a §102 references must anticipate all of the features of the presently claimed invention.

Drobnicki discloses a very specialized system for locating aircraft on the ground. Drobnicki apparently modifies the aircraft transponder to generate a special signal while on the ground such that the aircraft can be distinguished from airborne aircraft and be identified as well:

> " The system contemplates a circuit which will inhibit interrogation of the IFF transponders from a local high power interrogator. **A local interrogating device is located on each aircraft** which will produce replies from the aircraft transponder at a lower rate than is normally obtained from ground interrogation of the IFF transponder.
>
> The locally-interrogated transponder **will initiate a reply indicating the aircraft's identity**. Each receive station spaced

about the airport will decode the reply to obtain the identity information." (Col. 2, lines 5-15, emphasis added)

Thus, the system of Drobnicki requires that each participating aircraft be suitably modified. If an aircraft is not so modified, it will not "appear" to the system. Such a system is difficult to implement, as aircraft owners are not enthusiastic about buying more transponder equipment. In order to make the system of Drobnicki viable, it would have to be mandated by the FAA and foreign countries as well.

In contrast, in the present invention, existing aircraft signals are monitored without any invasive techniques. The present system is passive in that it does not need to interrogate an aircraft or require special equipment be placed aboard the aircraft. As a result, the system of the present invention can be implemented without extensive refit of all aircraft in operation.

The present invention identifies aircraft using various techniques. In one technique, recited in amended claims 3, 9, 15, and 21, the system retrieves the Mode-S address, a 24-bit binary address (the "address corresponding to aircraft identification" in the claims) which is unique to each aircraft. The S-mode address is NOT the aircraft identification number (e.g., N-number). However, in the present invention, an algorithm may be used to decode the N-number from the mode-S address.

For foreign aircraft, it is likely that the aircraft registration number (actually a series of letters for many foreign aircraft) may not be decoded by from the Mode-S address. In that case, the aircraft registration number may be determined by comparing the S-mode address with a database to look up the aircraft identification number.

In another technique, recited in amended claims 2, 8, 14, and 20, the mode-S address is decoded to generate the aircraft N-number, the N-number is confirmed by retrieving N-number data from the aircraft ACARS

data stream. In this manner, the reliability of aircraft identification data can be insured.

Applicant has amended the claims to more clearly recite these two identification techniques as separate independent claims.

Drobnicki does not teach or suggest either technique. Drobnicki discloses only that the aircraft is equipped with an "IFF" (Identity Friend or Foe?) transponder and does not indicate whether what type of transponder the IFF transponder comprises (e.g., Mode-S or Mode-C transponder). Drobnicki does not disclose decoding aircraft N-number by using a decoding algorithm. Drobnicki only discloses obtaining "identity" from the "IFF" transponder. Moreover, Drobnicki does not disclose confirming N-number by retrieving a second data stream from the aircraft and obtaining N-number from that data.

Moreover, Drobnicki certainly does not teach determining whether an aircraft is foreign or domestic, determining registration number using the appropriate technique (algorithm for domestic, look-up table for foreign) as set forth in claim 3. Finally, Drobnicki does not disclose determining aircraft owner, serial number, or other aircraft data from a database as set forth in dependent claims 4, 5, 10, 11, 16, 17, 22, and 23. Such information can be very useful in determining aircraft noise violations and moreover in billing for landing fees and the like.

Thus, applicant submits that claims 2-6, 8-12, 13-18 and 20-24 are allowable over Drobnicki.

The remaining §102 rejection actually comprises three separate §102 rejections, as the three references were offered in the alternate. Applicant is again disturbed that the individual limitations of claims 13-24 were not addressed in this rejection. In order to reject all of

these claims, an analysis of all of the claims should have been presented.

As noted above, claims 13 and 19 have been cancelled and claims 14, 15, 20 and 21 placed into independent form to recite independently the features of N-number verification, and N-number derivation for domestic and foreign aircraft.

Farmakis is directed toward a satellite controlled ATC system based upon GPS receivers. As with Drobnicki, it appears that Farmakis requires the aircraft systems be modified in order to be part of the ATC system. Farmakis discusses broadly the concept of "identifying" an aircraft, but does not disclose generating N-number data from the Mode-S address, confirming N-number data using ACARS data, or generating foreign registration data using a database. Farmakis does not disclose the dependent claimed features of generating aircraft serial number, ownership, and other data from a database.

Schwab et al. discloses a technique for monitoring aircraft position during training exercises. Standard IFF[2] transponders are "enabled" by a "squitter" on the aircraft. Again, aircraft modification is necessary. Time of arrival at a plurality of receivers is used to track the aircraft. The aircraft is "identified" by assigning it a predetermined TACAN frequency[3]. No aircraft address is read by the device of Schwab. Thus, Schwab does not even anticipate applicant's broadest claims as-filed. Further analysis is not required.

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[2] IFF, or "Identify Friend or Foe" is generally a military term, as commercial aircraft are generally not categorized as "friend" or "foe". Thus it would appear that Drobnicki and Schwab are directed toward military applications. Both are assigned to the same assignee, Cardion, Inc. of Woodbury, NY.

[3]Note in Col. 8, lines 33-39, Schwab appears to confirm that his invention has mostly military applications.

Atul (JP 911982A) discloses an airport runway incursion warning system. It appears that Atul uses radar to locate aircraft, not TDOA or other radio signal tracking technology. Atul broadly states that the aircraft is "identified" from a signal from the aircraft, but does not elaborate. Again, the Mode-S to N-number correlation is missing, as is the confirmation via ACARS and domestic/foreign registration identification. Clearly missing are the ancillary identification features recited in the dependent claims.

CONCLUSION

The minor errors in the application noted by the Examiner have been corrected.

The Evers reference has been removed as Prior Art by adding Mr. Evers as an inventor and claiming Priority from his applications.

None of the remaining references recite the claimed limitations of generating identification (e.g., N-number) data from the (Mode-S) address, confirming N-number data using a secondary signal (ACARS data), or generating foreign registration data using a database. None of the references cited disclose the dependent claimed features of generating aircraft serial number, ownership, and other data from a database.

As such, all of the claims are now in condition for allowance. An early Notice of Allowance is respectfully requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. CANCELLED

2. (AMENDED) A [The] method [of claim 1, further] of generating aircraft position and identification information, comprising the steps of:

receiving, at a plurality of radio receivers, a first radio signal from an aircraft, the first radio signal including an address corresponding to aircraft identification;

generating, at each of the plurality of radio receivers, a time stamp indicating when the first radio signal is received at each of the plurality of radio receivers;

transmitting data contents of the radio signal and the time stamp to a central workstation;

generating aircraft position data by measuring differences in time of arrival of the first radio signal between at least two of the plurality of the radio receivers;

generating aircraft identification data from the address corresponding to aircraft identification;

receiving a second radio signal from the aircraft, the second radio signal containing aircraft identification information; and

correlating aircraft identification information from the second radio signal with aircraft identification information from the first radio signal to confirm identity of the aircraft.

3. (AMENDED) A [The] [method of claim 2,] of generating aircraft position and identification information, comprising the steps of:

receiving, at a plurality of radio receivers, a first radio signal from an aircraft, the first radio signal including an address corresponding to aircraft identification;

generating, at each of the plurality of radio receivers, a time stamp indicating when the first radio signal is received at each of the plurality of radio receivers;

transmitting data contents of the radio signal and the time stamp to a central workstation;

generating aircraft position data by measuring differences in time of arrival of the first radio signal between at least two of the plurality of the radio receivers; and

generating aircraft identification data from the address corresponding to aircraft identification,

wherein said step of generating aircraft identification data from the address corresponding to aircraft identification comprises the steps of:

determining whether the aircraft is domestic or foreign;

decoding, if the aircraft is determined to be domestic, using a predetermined algorithm, the aircraft registration number from the address; and

looking up, if the aircraft is determined to be foreign, the aircraft registration number from a database correlating foreign registration numbers and addresses.

4. The method of claim 3, wherein said step of generating aircraft identification data from the address corresponding to aircraft identification further comprises the steps of:

extracting, from a database, additional aircraft identification information stored in the database corresponding to aircraft registration number.

5. The method of claim 4 wherein the additional information includes at least one of aircraft manufacturer, model number, airframe serial number, and aircraft ownership information.

6. The method of claim 5, further including the step of:

displaying aircraft identification and location information in a real-time air traffic display.

7. CANCELLED

8. (AMENDED) An [The] apparatus [of claim 7, further] for generating aircraft position and identification information, comprising:

a plurality of radio receivers for receiving a first radio signal from an aircraft, the first radio signal including an address corresponding to aircraft identification;

means, coupled to the plurality of radio receivers, for generating a time stamp indicating when the first radio signal is received at each of the plurality of radio receivers;

transmission means, for transmitting the radio signal and the time stamp to a central workstation;

a central workstation, coupled to the transmission means, for generating aircraft position data by measuring differences in time of arrival of the first radio signal between at least two of the plurality of the radio receivers;

means for generating aircraft identification data from the address corresponding to aircraft identification;

means for receiving a second radio signal from the aircraft, the second radio signal containing aircraft identification information; and

means for correlating aircraft identification information from the second radio signal with aircraft identification information from the first radio signal to confirm identity of the aircraft.

9. (AMENDED) An [The] apparatus [of claim 8,] for generating aircraft position and identification information, comprising:

a plurality of radio receivers for receiving a first radio signal from an aircraft, the first radio signal including an address corresponding to aircraft identification;

means, coupled to the plurality of radio receivers, for generating a time stamp indicating when the first radio signal is received at each of the plurality of radio receivers;

transmission means, for transmitting the radio signal and the time stamp to a central workstation;

a central workstation, coupled to the transmission means, for generating aircraft position data by measuring differences in time of arrival of the first radio signal between at least two of the plurality of the radio receivers; and

means for generating aircraft identification data from the address corresponding to aircraft identification,

wherein said means for generating aircraft identification data from the address corresponding to aircraft identification comprises:

means for determining whether the aircraft is domestic or foreign;

means for decoding, if the aircraft is determined to be domestic, using a predetermined algorithm, the aircraft registration number from the address; and

means for looking up, if the aircraft is determined to be foreign, the aircraft registration number from a database correlating foreign registration numbers and addresses.

10. The apparatus of claim 9, wherein said means for generating aircraft identification data from the address corresponding to aircraft identification further comprises:

means for extracting, from a database, additional aircraft identification information stored in the database corresponding to aircraft registration number.

11. (Amended) The apparatus of claim [11] 10 wherein the additional information includes at least one of aircraft manufacturer, model number, airframe serial number, and aircraft ownership information.

12. The apparatus of claim 11, further including:

means for displaying aircraft identification and location information in a real-time air traffic display.

13. CANCELLED

14. (AMENDED) A [The] method [of claim 13, further] generating aircraft identification information, [further] comprising the steps of:

receiving, from at least one radio receiver, a first radio signal from an aircraft, the first radio signal including an address corresponding to aircraft identification;

transmitting the radio signal to a central workstation; and

generating aircraft identification data from the address corresponding to aircraft identification;

receiving a second radio signal from the aircraft, the second radio signal containing aircraft identification information; and

correlating aircraft identification information from the second radio signal with aircraft identification information from the first radio signal to confirm identity of the aircraft.

15. (AMENDED) A [The] method [of claim 14,] of generating aircraft identification information, comprising the steps of:

receiving, from at least one radio receiver, a first radio signal from an aircraft, the first radio signal including an address corresponding to aircraft identification;

transmitting the radio signal to a central workstation; and

generating aircraft identification data from the address corresponding to aircraft identification,

wherein said step of generating aircraft identification data from the address corresponding to aircraft identification comprises the steps of:

determining whether the aircraft is domestic or foreign;

decoding, if the aircraft is determined to be domestic, using a predetermined algorithm, the aircraft registration number from the address; and

looking up, if the aircraft is determined to be foreign, the aircraft registration number from a database correlating foreign registration numbers and addresses.

16. The method of claim 15, wherein said step of generating aircraft identification data from the address corresponding to aircraft identification further comprises the steps of:

extracting, from a database, additional aircraft identification information stored in the database corresponding to aircraft registration number.

17. The method of claim 16 wherein the additional information includes at least one of aircraft manufacturer, model number, airframe serial number, and aircraft ownership information.

18. The method of claim 17, further including the step of:

displaying aircraft identification information in a real-time air traffic display.

19. CANCELLED

20. (AMENDED) An [The] apparatus [of claim 19, further] for generating aircraft position and identification information, comprising:

at least one radio receiver[s] for receiving a first radio signal from an aircraft, the first radio signal including an address corresponding to aircraft identification;

transmission means, for transmitting the radio signal;

means, coupled to the transmission means, for generating aircraft identification data from the address corresponding to aircraft identification;

means for receiving a second radio signal from the aircraft, the second radio signal containing aircraft identification information; and

means for correlating aircraft identification information from the second radio signal with aircraft identification information from the first radio signal to confirm identity of the aircraft.

21. (AMENDED) An [The] apparatus [of claim 20,] for generating aircraft position and identification information, comprising:

at least one radio receiver[s] for receiving a first radio signal from an aircraft, the first radio signal including an address corresponding to aircraft identification;

transmission means, for transmitting the radio signal; and

means, coupled to the transmission means, for generating aircraft identification data from the address corresponding to aircraft identification,

wherein said means for generating aircraft identification data from the address corresponding to aircraft identification comprises:

means for determining whether the aircraft is domestic or foreign;

means for decoding, if the aircraft is determined to be domestic, using a predetermined algorithm, the aircraft registration number from the address; and

means for looking up, if the aircraft is determined to be foreign, the aircraft registration number from a database correlating foreign registration numbers and addresses.

22. The apparatus of claim 21, wherein said means for generating aircraft identification data from the address corresponding to aircraft identification further comprises:

means for extracting, from a database, additional aircraft identification information stored in the database corresponding to aircraft registration number.

23. The apparatus of claim 22 wherein the additional information includes at least one of aircraft manufacturer, model number, airframe serial number, and aircraft ownership information.

24. The apparatus of claim 23, further including:

means for displaying aircraft identification information in a real-time air traffic display.

25. CANCELLED

26. CANCELLED

27. CANCELLED

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31. CANCELLED

32. CANCELLED

33. CANCELLED

34. CANCELLED

35. CANCELLED

METHOD AND APPARATUS FOR CORRELATING FLIGHT IDENTIFICATION DATA WITH SECONDARY SURVEILLANCE RADAR DATA

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims priority from Provisional U.S. Patent Application Serial No. 60/113,169, filed December 21, [1999] 1998, entitled "METHOD AND APPARATUS FOR CORRELATING FLIGHT IDENTIFICATION DATA WITH SECONDARY SURVEILLANCE RADAR DATA" and incorporated herein by reference.

The present application is a Continuation-In-Part (CIP) of Application Ser. No. 09/432,757, filed April 3, 2001, now U.S. Patent No. 6,211,811, which in turn is a Divisional Application of Ser. No. 09/114,921, filed July 14, 1998, now U.S. Patent No. 5,999,116.

The subject matter of this application is related to co-pending U.S. Patent Application Serial Number 08/891,227, filed July 10, 1997, entitled "METHOD AND APPARATUS FOR IMPROVING THE ACCURACY OF RELATIVE POSITION ESTIMATES IN A SATELLITE-BASED NAVIGATION SYSTEM" and co-pending U.S. Patent Application Serial No. 09/114,921, filed July 14, 1998, entitled "Method and Apparatus for Improving the Surveillance Coverage and Target Identification in a Radar Based Surveillance System", and [Attorney Docket No. RANN-0003] Ser. No. 09/209,008, filed December 11, 1998, entitled "Passive Multilateration Auto-Calibration and Position Error